

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, consistent with 37 C.F.R. §1.112, and in light of the remarks which follow, are respectfully requested.

Claims 1, 5, 6, 10-14 and 17 have been amended at least partly in response to issues raised in the Office Action. Claims 1, 13, 14 and 17 have been amended to include the features of now canceled claims 2 and 3. Claims 10 and 12 have been amended to depend upon claim 1. Claims 1, 4-14 and 16-18 remain pending in this application.

Claims 2, 5, 6, 10-12 and 16 were rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth in paragraph (2) of the Office Action. Reconsideration and withdrawal of this rejection is requested in view of the above amendments and the following comments.

The issue raised in paragraph 2(a) of the Office Action has been obviated by changing the word "and" to --or-- in those claims where a description of an element of a formula has included a list of suitable groups. The issue raised in paragraph 2(b) of the Office Action has been obviated by adding suitable Markush terminology to claim 6 and by adding the word --and-- between the recitation of formula S-8 and formula S-9. The issues raised in paragraphs 2(c) and 2(d) have been obviated by the present amendment.

Accordingly, the rejection under §112, second paragraph, should be withdrawn and such action is respectfully requested.

Claims 1, 2, 4, 6, 9-11, 13-15, 17 and 18 have been rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent 6,313,196 to Helling et al taken in view of the

evidence in U.S. Patent 4,665,411 to Kiritani et al for reasons set forth in paragraph (4) of the Office Action. Reconsideration of this rejection is requested for the following reasons.

Helling '196 fails as an anticipatory reference against the presently amended claims because the document does not disclose or suggest ink compositions containing (1) dyes of the general formula (I) nor (2) ionic group-containing polymers which are vinyl polymers. Accordingly, the §102(e) rejection based on Helling '196 should be withdrawn.

Claims 1, 4, 6-8, 13, 14, 17 and 18 were rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent 6,344,497 to Meyrick et al taken in view of the evidence in U.S. Patent 4,665,411 to Kiritani et al for the reasons set forth in paragraph (5) of the Office Action. Reconsideration and withdrawal of this rejection is requested in view of the above amendments and the following comments.

Meyrick '497 likewise fails to anticipate the presently amended claims because the ink compositions disclosed in the reference do not contain dyes of the general formula (I) and do not contain ionic group-containing vinyl polymers. Consequently, the §102(e) rejection based on Meyrick '497 should be withdrawn.

Claims 2, 10, 11 and 15 were rejected under 35 U.S.C. §103(a) as unpatentable over Meyrick '497 in view of either JP 03-231975 or JP 09-059 552 for the reasons expressed in paragraph (8) of the Office Action. Reconsideration and withdrawal of this rejection is requested for the following reasons.

As indicated above, Meyrick '497 fails to disclose or suggest ink compositions containing a dye of the general formula (I) and an ionic group-containing vinyl polymer. While the JP '975 and JP '552 references disclose solution inks that use oil-soluble dyes

having the same structure as in the present invention, these solution inks have entirely different configurations from the polymer dispersion ink of the present invention. Accordingly, the properties and effects of these inks are naturally different from those of the present invention as well.

Moreover, even if one of ordinary skill substituted the dyes of the Japanese publications for those of Meyrick '497, the resultant ink compositions would not have an ionic group-containing vinyl polymer. The inks of Meyrick '497 require the presence of a water-dissipatable polyester containing ionic groups to impart water-dispersibility. There is nothing in the disclosures of the Japanese documents which would provide motivation to replace the water-dissipatable polyesters required by Meyrick '497 with ionic group-containing vinyl polymers in order to arrive at the present invention. Accordingly, the §103(a) rejection based on Meyrick '497 in view of JP '975 or JP '552 should be withdrawn.

Claims 2 and 12 were rejected under 35 U.S.C. §103(a) as unpatentable over Meyrick '497 in view of U.S. Patent 5,508,421 to Suzuki et al for reasons set forth in paragraph (9) of the Office Action. Reconsideration and withdrawal of this rejection is requested for the following reasons.

The deficiencies of Meyrick '497 in failing to disclose the present invention have been fully discussed above. The ink-jet ink disclosed in Example 4 of Suzuki '421 does not contain an ionic group-containing vinyl polymer. Thus, the combined disclosures of Meyrick '497 and Suzuki '421 clearly do not disclose or suggest the presently claimed invention. The §103(a) rejection based on these patents, therefore, should be withdrawn.

Claim 16 has been rejected under 35 U.S.C. §103(a) as unpatentable over Helling '196 or Meyrick '497, either in view of U.S. Patent 5,302,437 to Idei et al for reasons expressed in paragraph (10) of the Office Action. Reconsideration of this rejection is requested in view of the following remarks.

As indicated previously, neither of the primary references disclose or suggest ink compositions as set forth in the present claims, i.e. containing dyes of general formula (I) and ionic group-containing vinyl polymers. Idei '437 does not disclose or suggest ink compositions containing dyes of general formula (I) and ionic group-containing vinyl polymers. Accordingly, the combined disclosures of Helling '196 or Meyrick '497 with Idei '437 fails to render obvious the presently claimed invention and the §103(a) rejection based on these references should be withdrawn.

Claims 1-11, 13-15, 17 and 18 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 6,031,019 to Tsutsumi et al in view of U.S. Patent 6,344,497 to Meyrick et al, U.S. Patent 4,665,411 to Kiritani et al and either JP '975 or JP '552 for the reasons set forth in paragraph (11) of the Office Action. Reconsideration and withdrawal of this rejection is requested for the following reasons.

As recited in the claims, the ink-jet ink of the present invention has a coloring particulate containing an oil-soluble dye represented by general formula (I), an ionic-group-containing vinyl polymer, and a hydrophobic high-boiling-point organic solvent of a specified relative content dispersed in a water-based medium. The ink not only provides excellent dispersion stability, hue, light resistance, and water resistance, but also has

excellent permeability with respect to photo quality paper, thereby realizing a reduction in printing blemishes immediately after printing.

In contrast, Tsutsumi '019 does not disclose the hydrophobic high-boiling-point organic solvent and the oil-soluble dye which are recited in the claims of the present application, and provides no suggestion of what constitution the ink should have in order to realize, among other desired properties, improved permeability with respect to photo quality paper and a reduction in printing blemishes.

Further, neither Meyrick '497 nor Kiritani '411 disclose or suggest the combination of ionic-group-containing vinyl polymer and the oil-soluble dye of the present invention. Those of ordinary skill, seeking to improve the properties of the inks disclosed in Tsutsumi '019, would not be motivated to look in the direction of Meyrick '497 or Kiritani '411 since the inks of the secondary art are so vastly different from those of the primary reference. One could not reasonably predict the results which would occur by modifying the inks of Tsutsumi '019 in accordance with the teachings of Meyrick '497 or Kiritani '411.

This would further be complicated by applying the teachings of the Japanese documents. Applicants respectfully submit that it would not have been obvious from the cited references, to one of ordinary skill in the art, to select and combine an oil-soluble dye having the specific structure disclosed in the present application, an ionic-group-containing vinyl polymer, and the specific hydrophobic high-boiling-point organic solvent, to achieve a polymer dispersion ink having the excellent properties and effects achieved by the inventors. Accordingly, the §103(a) rejection based on combining Tsutsumi '019 with

Meyrick '497, Kiritani '411 and JP '975 or JP '552 should be withdrawn and such action is requested.

Claim 16 stands rejected under 35 U.S.C. §103(a) as unpatentable over Tsutsumi '019 in view of Meyrick '497, Kiritani '411 and either JP '975 or JP '552 and further in view of Idei '437 for reasons set forth in paragraph (12) of the Office Action.

Reconsideration of the rejection is requested in view of the following remarks.

The disclosure of Idei '437 does not supply the deficiencies of the basic combination of Tsutsumi '019, Meyrick '497, Kiritani '411 and JP '975 or JP '552 as discussed above. Their respective disclosures contain nothing which would provide motivation to modify the inks of Tsutsumi '019 with the oil-soluble dyes of formula (I) and the hydrophobic high boiling point organic solvents contained in the inks of the present invention. The results attained by combining the components of the claims, in terms of inks with the aforementioned characteristics could not have been predicted by studying the disclosures of the cited art. Accordingly, the §103(a) rejections based on Tsutsumi '019 in view of Meyrick '497, Kiritani '411 and either JP '975 or JP '552 further in view of Idei '437 should be withdrawn.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at (703) 838-6683 at her earliest convenience.

Respectfully submitted,

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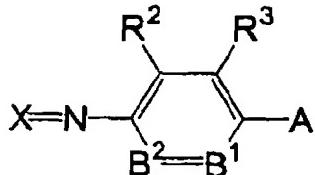
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Date: December 12, 2002

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Marked-up Copy of Claims 1, 5, 6, 10-14, 17

1. (Amended) An ink-jet ink comprising a coloring composition containing a coloring particulate containing an ionic-group-containing polymer, an oil-soluble dye, and a hydrophobic high-boiling-point organic solvent having a boiling point of at least 150°C, the coloring particulate being dispersed in a water-based medium, wherein the oil-soluble dye is represented by general formula I:



wherein X represents a residual group of a color coupler; A represents -NR⁴R⁵ or a hydroxy group; R⁴ and R⁵ each independently represents a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; B¹ represents =C(R⁶)- or =N-; B² represents -c(R⁷)= or -N=; R², R³, R⁶ and R⁷ each independently represent a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano group, -OR⁵¹, -SR⁵², -CO₂R⁵³, -OCOR⁵⁴, -NR⁵⁵R⁵⁶, -CONR⁵⁷R⁵⁸, -SO₂R⁵⁹, -SO₂NR⁶⁰R⁶¹, -NR⁶²CONR⁶³R⁶⁴, -NR⁶⁵CO₂R⁶⁶, -COR⁶⁷, -NR⁶⁸COR⁶⁹, or -NR⁷⁰SO₂R⁷¹; R⁵¹, R⁵², R⁵³, R⁵⁴, R⁵⁵, R⁵⁶, R⁵⁷, R⁵⁸, R⁵⁹, R⁶⁰, R⁶¹, R⁶², R⁶³, R⁶⁴, R⁶⁵, R⁶⁶, R⁶⁷, R⁶⁸, R⁶⁹, R⁷⁰ and R⁷¹ each independently represents a hydrogen atom, aliphatic group or aromatic group; and any of pairs, R² and R³, R⁴ and R⁵, R⁵ and R⁶, and R⁶ and R⁷ may bond together to form a ring structure;

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wherein the ionic group-containing polymer is a vinyl polymer; and
wherein the content of the hydrophobic high-boiling-point organic solvent in the
coloring composition is at least 25% by mass and not more than 95% by mass with respect
to a total amount of the ionic-group-containing polymer, the oil-soluble dye, and the
hydrophobic high-boiling-point organic solvent.

5. (Amended) An ink-jet ink according to claim 1, wherein the ionic-group-containing
vinyl polymer has at least one [of] ionic group selected from the group consisting of carboxyl
groups, [and] sulfonic acid groups and mixtures thereof [as ionic groups].

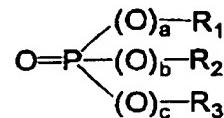
6. (Amended) An ink-jet ink according to claim 1, wherein the hydrophobic high-
boiling-point organic solvent is at least one hydrophobic high-boiling-point organic solvent
selected from the group consisting of hydrophobic high-boiling-point organic solvents
represented by following formulae S-1 to S-9:

Formula [S - 1]

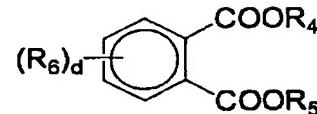
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Marked-up Copy of Claims 1, 5, 6, 10-14, 17

Formula [S - 2]



Formula [S - 3]



Formula [S - 4]



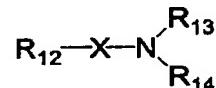
Formula [S - 5]



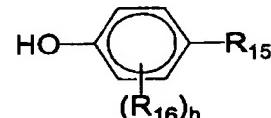
Formula [S - 6]



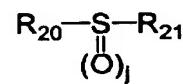
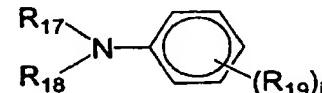
Formula [S - 7]



Formula [S - 8]



Formula [S - 9]



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Marked-up Copy of Claims 1, 5, 6, 10-14, 17

wherein: in the formula S-1, R₁, R₂ and R₃ each independently represents [one of] an aliphatic group [and] or an aryl group, and a, b and c each independently represents 0 or 1;

in the formula S-2, R₄ and R₅ each independently represents [one of] an aliphatic group [and] or an aryl group, R₆ represents [one of] a fluorine atom, chlorine atom, bromine atom, iodine atom, alkyl group, alkoxy group, aryloxy group, alkoxy carbonyl group [and] or aryloxycarbonyl group, d represents an integer from 0 to 3, and[, in a case] where d is more than 1, one R₆ may be different from another R₆;

in the formula S-3, Ar represents an aryl group, e represents an integer from 1 to 6, and R₇ represents [one of] an e-valent hydrocarbon group [and] or a hydrocarbon group that is mutually bonded by an ether bond;

in the formula S-4, R₈ represents an aliphatic group, f represents an integer from 1 to 6, and R₉ represents [one of] an f-valent hydrocarbon group [and] or a hydrocarbon group that is mutually bonded by an ether bond;

in the formula S-5, g represents an integer from 2 to 6, R₁₀ represents a g-valent hydrocarbon group other than an aryl group, and R₁₁ represents [one of] an aliphatic group [and] or an aryl group;

in the formula S-6, R₁₂, R₁₃ and R₁₄ each independently represents [one of] a hydrogen atom, aliphatic group [and] or aryl group, X represents [one of] -CO- [and] or

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-SO₂⁻, and one of a pair R₁₂ and R₁₃ [and a pair] or R₁₃ and R₁₄ may bond together mutually to form a ring;

in the formula S-7, R₁₅ represents [one of] an aliphatic group, alkoxy carbonyl group, aryloxycarbonyl group, alkylsulfonyl group, arylsulfonyl group, aryl group [and] or cyano group, R₁₆ represents [one of] a fluorine atom, chlorine atom, bromine atom, iodine atom, aliphatic group, aryl group, alkoxy group [and] or aryloxy group, h represents an integer from 0 to 3, and [in a case] where h is more than 1, one R₁₆ may be different from another R₁₆;

in the formula S-8, R₁₇ and R₁₈ each independently represents [one of] an aliphatic group or an aryl group, R₁₉ represents [one of] a fluorine atom, chlorine atom, bromine atom, iodine atom, aliphatic group, aryl group, alkoxy group or aryloxy group, i represents an integer from 0 to 4, and, [in a case] where i is more than 1, one R₁₉ may be different from another R₁₉; and

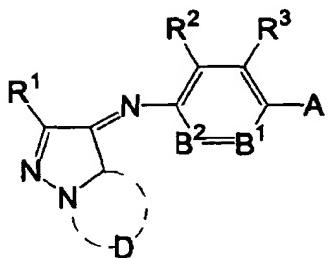
in the formula S-9, R₂₀ and R₂₁ each independently represents an aliphatic group or aryl group, and j represents 1 or 2.

10. (Amended) An ink-jet ink according to claim [2] 1, wherein the oil-soluble dye which is represented in said general formula I is a compound which is represented in the following general formula II:

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General Formula II



wherein, R², R³, A, B¹, and B² are synonymous with R², R³, A, B¹, and B² in said general formula I;

R¹ represents [one of] a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR¹¹, -SR¹², -CO₂R¹³, -OCOR¹⁴, -NR¹⁵R¹⁶, -CONR¹⁷R¹⁸, -SO₂R¹⁹, -SO₂NR²⁰R²¹, -NR²²CONR²³R²⁴, -NR²⁵CO₂R²⁶, -COR²⁷, -NR²⁸COR²⁹[, and] or -NR³⁰SO₂R³¹;

R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹, R²², R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸, R²⁹, R³⁰, and R³¹ represent respectively independently [one of] a hydrogen atom, an aliphatic group[, and] or an aromatic group;

D represents an atom group which forms [one of] a five-membered nitrogen-containing heterocyclic ring [and] or a six-membered nitrogen-containing heterocyclic ring which may optionally be substituted [for at least one of] by an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR⁸¹, -SR⁸², -CO₂R⁸³, -

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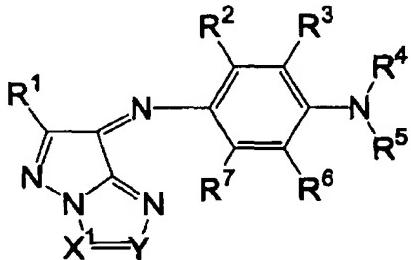
Marked-up Copy of Claims 1, 5, 6, 10-14, 17

OCOR⁸⁴, -NR⁸⁵R⁸⁶, -CONR⁸⁷R⁸⁸, -SO₂R⁸⁹, -SO₂NR⁹⁰R⁹¹, -NR⁹²CONR⁹³R⁹⁴, -NR⁹⁵CO₂R⁹⁶,
-COR⁹⁷, -NR⁹⁸COR⁹⁹[, and] or -NR¹⁰⁰SO₂R¹⁰¹;

the heterocyclic ring may further form a condensed ring with another ring; and
R⁸¹, R⁸², R⁸³, R⁸⁴, R⁸⁵, R⁸⁶, R⁸⁷, R⁸⁸, R⁸⁹, R⁹⁰, R⁹¹, R⁹², R⁹³, R⁹⁴, R⁹⁵, R⁹⁶, R⁹⁷, R⁹⁸,
R⁹⁹, R¹⁰⁰, and R¹⁰¹ represent respectively independently [one of] a hydrogen atom, an
aliphatic group[, and] or an aromatic group.

11. (Amended) An ink-jet ink according to claim 10, wherein the compound which
is represented in said general formula II is a compound which is represented in the
following general formula III:

General formula III



wherein, R¹, R², R³, R⁴, R⁵, R⁶, and R⁷ are synonymous with R¹, R², R³, R⁴, R⁵, R⁶,
and R⁷ in said general formula II;

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X¹ and Y represent respectively independently [one of] -C (R⁸) = [and] or -N=;

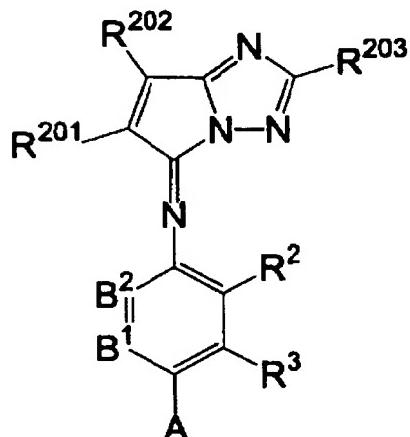
R⁸ represents [one of] a hydrogen atom, an aliphatic group, [and] or an aromatic group; and

one of X¹ [and] or Y is always -N=, and X¹ and Y are -N= at different times.

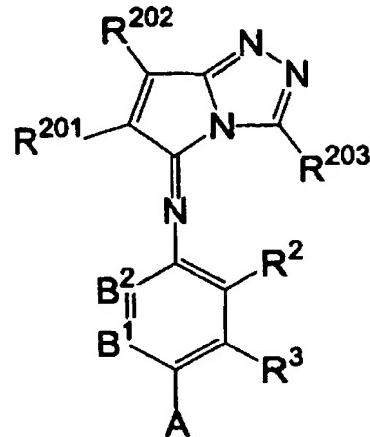
12. (Amended) An ink-jet ink according to claim [2] 1, wherein the oil-soluble dye which is represented in said general formula I is at least one compound selected from the group consisting of compounds which are represented in the following formulas IV-1 to IV-4:

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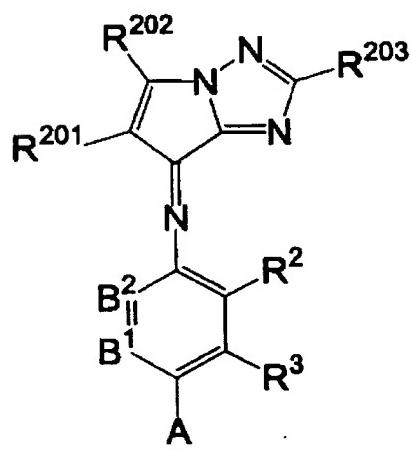
Marked-up Copy of Claims 1, 5, 6, 10-14, 17



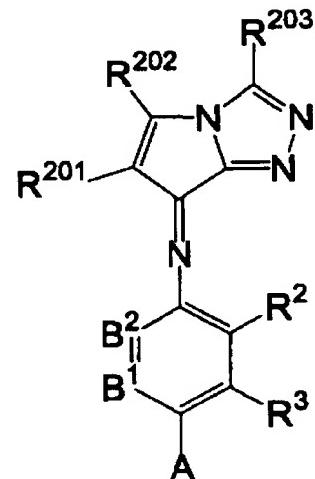
(IV-1)



(IV-2)



(IV-3)



(IV-4)

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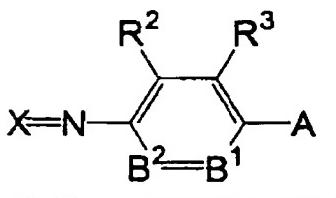
Marked-up Copy of Claims 1, 5, 6, 10-14, 17

wherein, A, R², R³, B¹, and B² are synonymous with A, R², R³, B¹, and B² in said general formula I;

R²⁰¹, R²⁰², and R²⁰³ represent respectively independently [one of] a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR¹¹, -SR¹², -CO₂R¹³, -OCOR¹⁴, -NR¹⁵R¹⁶, -CONR¹⁷R¹⁸, -SO₂R¹⁹, -SO₂NR²⁰R²¹, -NR²²CONR²³R²⁴, -NR²⁵CO₂R²⁶, -COR²⁷, -NR²⁸COR²⁹[, and] or -NR³⁰SO₂R³¹; R¹¹, R¹², R¹³, R¹⁴, R¹⁵, R¹⁶, R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹, R²², R²³, R²⁴, R²⁵, R²⁶, R²⁷, R²⁸, R²⁹, R³⁰, and R³¹ represent respectively independently [one of] a hydrogen atom, an aliphatic group[, and] or an aromatic group; and

R²⁰¹ and R²⁰² may be combined with each other [and] to form a ring structure.

13. (Amended) A coloring composition comprising a coloring particulate containing an ionic-group-containing polymer, an oil-soluble dye, and a hydrophobic high-boiling-point organic solvent having a boiling point of at least 150°C, the coloring particulate being dispersed in a water-based medium, wherein the oil-soluble dye is represented by general formula I:



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wherein X represents a residual group of a color coupler; A represents -NR⁴R⁵ or a hydroxy group; R⁴ and R⁵ each independently represents a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; B¹ represents =C(R⁶)- or =N-; B² represents -C(R⁷)= or -N=; R², R³, R⁶ and R⁷ each independently represent a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano group, -OR⁵¹, -SR⁵², -CO₂R⁵³, -OCOR⁵⁴, -NR⁵⁵R⁵⁶, -CONR⁵⁷R⁵⁸, -SO₂R⁵⁹, -SO₂NR⁶⁰R⁶¹, -NR⁶²CONR⁶³R⁶⁴, -NR⁶⁵CO₂R⁶⁶, -COR⁶⁷, -NR⁶⁸COR⁶⁹, or -NR⁷⁰SO₂R⁷¹; R⁵¹, R⁵², R⁵³, R⁵⁴, R⁵⁵, R⁵⁶, R⁵⁷, R⁵⁸, R⁵⁹, R⁶⁰, R⁶¹, R⁶², R⁶³, R⁶⁴, R⁶⁵, R⁶⁶, R⁶⁷, R⁶⁸, R⁶⁹, R⁷⁰ and R⁷¹ each independently represents a hydrogen atom, aliphatic group or aromatic group; and any of pairs, R² and R³, R³ and R⁴, R⁴ and R⁵, R⁵ and R⁶, and R⁶ and R⁷ may bond together to form a ring structure;

wherein the ionic group-containing polymer is a vinyl polymer; and wherein the content of the hydrophobic high-boiling-point organic solvent in the coloring composition is at least 25% by mass and not more than 95% by mass with respect to a total amount of the ionic-group-containing polymer, the oil-soluble dye, and the hydrophobic high-boiling-point organic solvent.

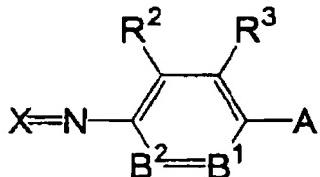
14. (Amended) An ink-jet recording method in which recording is conducted using an ink-jet ink on a recording material, the ink comprising a coloring composition containing a coloring particulate containing an ionic-group-containing polymer, an oil-

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soluble dye, and a hydrophobic high-boiling-point organic solvent having a boiling point of at least 150°C, the coloring particulate being dispersed in a water-based medium, wherein the oil-soluble dye is represented by

general formula I:



wherein X represents a residual group of a color coupler; A represents -NR⁴R⁵ or a hydroxy group; R⁴ and R⁵ each independently represents a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; B¹ represents =C(R⁶)- or =N-; B² represents -C(R⁷)= or -N=; R², R³, R⁶ and R⁷ each independently represent a hydrogen atom, halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano group, -OR⁵¹, -SR⁵², -CO₂R⁵³, -OCOR⁵⁴, -NR⁵⁵R⁵⁶, -CONR⁵⁷R⁵⁸, -SO₂R⁵⁹, -SO₂NR⁶⁰R⁶¹, -NR⁶²CONR⁶³R⁶⁴, -NR⁶⁵CO₂R⁶⁶, -COR⁶⁷, -NR⁶⁸COR⁶⁹, or -NR⁷⁰SO₂R⁷¹; R⁵¹, R⁵², R⁵³, R⁵⁴, R⁵⁵, R⁵⁶, R⁵⁷, R⁵⁸, R⁵⁹, R⁶⁰, R⁶¹, R⁶², R⁶³, R⁶⁴, R⁶⁵, R⁶⁶, R⁶⁷, R⁶⁸, R⁶⁹, R⁷⁰ and R⁷¹ each independently represents a hydrogen atom, aliphatic group or aromatic group; and any of pairs, R² and R³, R³ and R⁴, R⁴ and R⁵, R⁵ and R⁶, and R⁶ and R⁷ may bond together to form a ring structure;

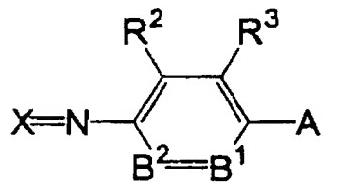
Attachment to AMENDMENT dated December 12, 2002

Marked-up Copy of Claims 1, 5, 6, 10-14, 17

wherein the ionic group-containing polymer is a vinyl polymer; and
wherein the content of the hydrophobic high-boiling-point organic solvent in the
coloring composition is at least 25% by mass and not more than 95% by mass with respect
to a total amount of the ionic-group-containing polymer, the oil-soluble dye, and the
hydrophobic high-boiling-point organic solvent.

17. (Amended) An ink-jet recording method comprising the step of:

(a) preparing an ink-jet ink containing a coloring composition in which a coloring
particulate containing an ionic-group-containing polymer, an oil-soluble dye, and a
hydrophobic high-boiling-point organic solvent having a boiling point of at least 150°C are
dispersed in an aqueous medium, wherein the oil-soluble dye is represented by general
formula I:



wherein X represents a residual group of a color coupler; A represents -NR⁴R⁵ or a
hydroxy group; R⁴ and R⁵ each independently represents a hydrogen atom, aliphatic group,
aromatic group or heterocyclic group; B¹ represents =C(R⁶)- or =N-; B² represents
-C(R⁷)= or -N=; R², R³, R⁶ and R⁷ each independently represent a hydrogen atom,

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halogen atom, aliphatic group, aromatic group, heterocyclic group, cyano group, -OR⁵¹,
-SR⁵², -CO₂R⁵³, -OCOR⁵⁴, -NR⁵⁵R⁵⁶, -CONR⁵⁷R⁵⁸, -SO₂R⁵⁹, -SO₂NR⁶⁰R⁶¹,
-NR⁶²CONR⁶³R⁶⁴, -NR⁶⁵CO₂R⁶⁶, -COR⁶⁷, -NR⁶⁸COR⁶⁹, or -NR⁷⁰SO₂R⁷¹; R⁵¹, R⁵², R⁵³, R⁵⁴,
R⁵⁵, R⁵⁶, R⁵⁷, R⁵⁸, R⁵⁹, R⁶⁰, R⁶¹, R⁶², R⁶³, R⁶⁴, R⁶⁵, R⁶⁶, R⁶⁷, R⁶⁸, R⁶⁹, R⁷⁰ and R⁷¹ each
independently represents a hydrogen atom, aliphatic group or aromatic group; and any of
pairs, R² and R³, R³ and R⁴, R⁴ and R⁵, R⁵ and R⁶, and R⁶ and R⁷ may bond together to
form a ring structure;

wherein the ionic group-containing polymer is a vinyl polymer; and
with the content of the hydrophobic high-boiling-point organic solvent in the
coloring composition being at least 25% by mass and not more than 95% by mass with
respect to total amount of the ionic-group-containing polymer, the oil-soluble dye, and the
hydrophobic high-boiling-point organic solvent,

- (b) disposing the ink-jet ink in a cartridge adapted for use in an ink-jet printer, and
- (c) using the cartridge in an ink jet printer for recording images.